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Subject: Fw: Baton Rouge Advocate Article (Bayou Corne)
Date: 10/11/2012 09:20 AM

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http://theadvocate.com/news/4121479-123/expert-links-gas-sinkhole

Expert links gas, sinkhole

Show caption Photo provided by Louisiana State Police -- A long-reach excavator removes trees and branches from northern Assumption Parish's sinkhole earlier this month. According to a new diagram of the sinkhole issued by Texas Brine LLC Wednesday, the funnel-shaped hole reaches 449 feet underround and has a surface area of 4.2 acres. The sinkhole emerged Aug. 3.

Geologist: Connection seen in info

By David J. Mitchell

River Parishes bureau

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3 Comments

The small community of Bayou Corne in northern Assumption Parish has been beset by a laundry list of the uncertain and unexplained: a yawning sinkhole in the swamp, earth tremors, natural gas bubbling up in bayous, gas percolating in the aquifer 100 feet down and, far deeper in the earth, a salt cavern owned by Texas Brine Co. of Houston that failed.

But with one sentence earlier this week during a community meeting in Bayou Corne, Shaw Environmental and Infrastructure geologist Gary Hecox wove together some of the first threads publicly linking the events in the Bayou Corne area during the past four months.

“It is very likely the release of oil and the gas we’re seeing, the cavern collapse and the sinkhole are all related,” Hecox said in summarizing what was suggested by the latest data that he and his colleagues had been sharing with residents.

During this time, Assumption Parish, state and Texas Brine officials had not offered a comprehensive explanation connecting these events — despite their obvious proximity to one another — as they waited for scientific data and completion of an observational well into the Texas Brine cavern to provide a better picture.

The cavern is located inside the Napoleonville Dome, near the northwestern edge of the 1-by-3-mile solid salt deposit. It begins 700 feet underground and stretches down thousands of feet.

Located between Bayou Corne and Grand Bayou, the sinkhole is about 200 feet to the northwest of the cavern across the surface. A new Texas Brine cross section of the sinkhole released Wednesday shows a roughly funnel-shaped hole that comes to a sharp point 449 feet underground. The hole has a surface at the top of 4.2 acres and has an estimated volume of 550,000 cubic yards, according to the illustration.

That’s enough space, if filled, to cover a football field with material nearly 24 stories high.

Combined with recently publicized U.S. Geological Survey findings on the tremors and findings from inside Texas Brine's cavern, Hecox and his colleagues provided the following early information pointing to the suggestive linkages:

- Marketable crude oil found on the sinkhole's surface and in the salt cavern are virtually identical, providing indications that the cavern failure may have caused the sinkhole, as scientists have suspected since the slurry hole formed Aug. 3.
- Natural gas in the salt cavern and percolating in waterways in the vicinity of the sinkhole have "a lot of similarities" at a molecular level while bubbles farther west in Pierre Part are swamp gas from decomposing organic matter.
- Material believed to be a shale sediment was found inside the plugged and abandoned Texas Brine salt cavern, apparently filling about 1,500 feet of the 2,250-foot-long cavity and pointing to some kind of cavern failure along its lower side.
- Natural gas in the Texas Brine cavern is similar to that in a nearby Chevron storage cavern, but both the gas and the crude oil may have entered the Texas Brine cavern from any of three natural oil and gas production zones along the western side of the salt dome. That oil may have also found its way up the side of the dome to the sinkhole's surface.
- The USGS consensus is that the failure of the Texas Brine cavern caused the earth tremors, not the other way around, as Texas Brine maintains.

The Louisiana Department of Natural Resources has hired Shaw Environmental to do a root-cause analysis of the situation, as well as manage efforts to find and vent natural gas found in the Mississippi River Alluvial Aquifer under the area.

While DNR officials cautioned Wednesday they do not have a full determination of the mechanisms leading from one event to the other, they said the recent analysis by Shaw Environmental and the state Office of Conservation regarding the crude oil "was critical in establishing" the connection between the sinkhole and the cavern.

"The experts are continuing to refine their understanding of the cause, and the crude oil connection is a big step forward," said Patrick Courreges, DNR spokesman, in an email statement.

The analyses also ruled out two existing gas storage caverns as sources of natural gas, narrowing the list of possible explanations, Courreges said.

Sonny Cranch, Texas Brine spokesman, said Wednesday the company agrees with Hecox's statement that it is likely the oil and gas, the cavern and sinkhole are related, but the question unanswered is how they are related, how "all the dots are connected" and in what order.

"That is yet to be accurately determined," Cranch said in an email statement Wednesday.

“As Mr. Hecox said, there is still evaluation to be done on the cavern and more data is needed. We’re all working to that end.”

Late Tuesday night in a separate statement, DNR Office of Conservation Commissioner Jim Welsh took note of the significance that the liquid hydrocarbons in the cavern and on the sinkhole are crude oil and not “diesel fuel,” as initially theorized.

“Distinguishing between ‘diesel fuel’ and ‘diesel-range crude oil’ is critical to the effort to ensure public safety by determining the cause of the cavern failure and the sinkhole, and their possible link to each other and to the natural gas that has been found in the aquifer in the Bayou Corne area,” Welsh said.

He said no underground sources in the dome contain enough diesel to account for what was found, but a formation containing both oil and gas could easily account for that amount.

In other developments, cleanup resumed Wednesday on the sinkhole after a section of edge about 50 feet long on the southwest side of the slurry hole collapsed Tuesday about 8:30 a.m., Assumption Parish and Texas Brine officials said.

The collapse, also known as sloughing off, halted work Tuesday, pulling down five trees and about 500 square feet of land.

While workers were cleaning up at the time, no one was injured, parish officials have said.